

WHAT IS CLAIMED IS:

1. A method for mooring a floating hydrocarbon drilling or production vessel to a plurality of tendons, said vessel characterized by having no temporary stability or buoyancy modules coupled thereto and by having a plurality of tensioning devices and a plurality of connection sleeves designed and arranged to receive upper ends of said tendons and be secured thereto, the method comprising the steps of,

 anchoring lower ends of said tendons to the seafloor,

 coupling a plurality of pull-down tension members from said tensioning devices to said upper ends of said tendons, and

 tensioning said pull-down tension members using said tensioning devices to further submerge said tension leg platform.
2. The method of claim 1 further comprising the step of,

 controlling tensions in said plurality of pull-down tension members by taking in at least said one of said tension members to increase its tension or paying out at least one of said tension members to decrease its tension.
3. The method of claim 1 further comprising the step of,

 tensioning said pull-down tension members causing said vessel to submerge without ballasting said vessel.
4. The method of claim 1 further comprising the step of,

 concurrently ballasting said vessel.
5. The method of claim 4 further comprising the steps of,

 tensioning said pull-down tension members with high tension,

submerging said vessel until said connection sleeves receive said upper ends of said tendons,

coupling said connection sleeves to said tendons, and

rapidly transferring said high tension from said pull-down tension members to said connection sleeves by slacking said pull-down tension members.

6. The method of claim 1 wherein said anchoring lower ends of said tendons comprises the steps of,

suspending an upper end of one of said tendons from said floating vessel,

positioning said tendon above a foundation anchored in seabed,

lowering the lower end of said tendon into said foundation, and

securing said lower end of said tendon to said foundation.

7. The method of claim 6 further comprising the step of,
suspending said tendon by a constant tension device.

8. The method of claim 6 further comprising the step of,
providing motion compensation between said suspended tendon and said vessel.

9 The method of claim 6 further comprising the step of,
suspending said tendon by a line passing through one of said connection sleeves.

10. The method of claim 9 further comprising the steps of,
raising said tendon through said connection sleeve, and
then coupling one of said plurality of pull-down tension members to said upper end of said tendon.

11. The method of claim 1 wherein,
said pull-down tension members pass through said connection sleeves.

12. A method for installing an offshore floating vessel, said vessel characterized by having no temporary stability or buoyancy modules coupled thereto and by having a connection sleeve designed and arranged to receive an upper end of a generally vertical tensile mooring member and be secured thereto, said mooring member having a lower end anchored to the seafloor, the method comprising the steps of,

coupling a pull-down tension member from said vessel through said connection sleeve to said upper end of said mooring member, and

tensioning said pull-down tension member to further submerge said vessel.

13. The method of claim 12 further comprising the steps of,

tensioning said pull-down tension member to further submerge said vessel until said connection sleeve receives said upper end of said mooring member, and

coupling said connection sleeve to said mooring member.

14. The method of claim 12 wherein,

said tensioning is performed by a tensioning device.

15. The method of claim 14 wherein,

said tensioning device is a winch.

16. The method of claim 14 wherein,

said tensioning device is a strand jack.

17. The method of claim 14 wherein,

said tensioning device is coupled to said vessel at a location above the waterline when said connecting sleeve receives said upper end of said mooring member.

18. The method of claim 14 wherein,

said tensioning device is removably coupled to said vessel.

19. The method of claim 18 wherein,
said tensioning device comprises a stopper or gripper.
20. The method of claim 14 further comprising the step of,
routing said pull-down tension member to provide a generally vertical pull to said upper end of said tensile mooring member.
21. The method of claim 20 wherein,
said routing is performed by a fairlead is disposed between said tensioning device and said connection sleeve.
22. The method of claim 14 further comprising the step of,
controlling said tensioning device locally.
23. The method of claim 14 further comprising the step of,
controlling said tensioning device remotely.
24. The method of claim 12 wherein,
said vessel is a tension leg platform.
25. The method of claim 24 wherein said tension leg platform has an integrated deck.
26. The method of claim 12 further comprising the step of,
measuring the tension in said pull-down tension member.
27. The method of claim 13 further comprising the step of,
after coupling said connection sleeve to said mooring member, slacking said pull-down tension member.
28. An arrangement for installing an offshore floating vessel, said vessel characterized by having a hull with no temporary stability or buoyancy modules coupled thereto and by having a connection sleeve coupled thereto and at least one column extending upwardly therefrom, said

connection sleeve being designed and arranged to receive an upper end of a generally vertical tensile mooring member and be secured thereto, said mooring member having a lower end anchored to the seafloor, the system comprising,

a tensioning device coupled to said vessel, and

a pull-down tension member coupled between said tensioning device and said mooring member.

29. The arrangement of claim 28 further comprising,

a platform designed and arranged to mount said tensioning device, said platform coupled to said column.

30. The arrangement of claim 28 further comprising,

a fairlead coupled on said hull, said pull-down tension member passing through said fairlead.

31. The arrangement of claim 28 wherein,

said tensioning device is coupled to said column with instrumented pins, said pins designed and arranged to provide an indication of tension present in said pull-down tension member.

32. The arrangement of claim 28 further comprising,

a control panel designed and arranged to control said tensioning device, said control panel disposed nearby said tensioning device.

33. The arrangement of claim 28 further comprising,

a control panel designed and arranged to control said tensioning device, said control panel disposed remote to said tensioning device.

34. The arrangement of claim 28 wherein,

- said pull-down tension member is a line.
35. The arrangement of claim 28 wherein,
said pull-down tension member is a chain.
36. The arrangement of claim 28 further comprising,
a stopper coupled to said vessel and designed and arranged to prevent movement of pull-down tension member when engaged.
37. The arrangement of claim 28 further comprising,
a gripper coupled to said vessel and designed and arranged to prevent outward movement of pull-down tension member when engaged.
38. The arrangement of claim 28 wherein,
said tensioning device is a winch.
39. The arrangement of claim 28 wherein,
said tensioning device is a strand jack.
40. The arrangement of claim 28 further comprising,
trolley rails disposed under a deck and coupled thereto, said deck mounted to the top of said column, and
a trolley winch removably and slideably coupled to said trolley rails.
41. The arrangement of claim 40 further comprising,
extension trolley rails removably coupled to said trolley rails and extending beyond said deck.
42. A method of tendon installation comprising the steps of,
suspending an upper end of said tendon from a floating hydrocarbon drilling or production vessel,

positioning said tendon above a foundation anchored in seabed,
lowering a lower end of said tendon into said foundation, and
securing said lower end of said tendon to said foundation.

43. The method of claim 42 further comprising the step of,
suspending said tendon by a constant tension device.
44. The method of claim 43 further comprising the step of,
providing motion compensation between said suspended tendon and said vessel.